

WHAT IS CLAIMED IS:

1. A method for the determination of the resistance of cells versus the action of an active substance comprising:

(i) providing a sample containing cells exposed or having been exposed to said active substance,

(ii) analyzing a gene expression pattern of said cells on a micro-array, said microarray comprising on specific locations thereon capture probes for specific detection and quantification of at least 5 ATP binding cassette (ABC) transporters, wherein a change of the gene expression of said at least 5 ABC transporters by a factor of at least about 1.5 as compared to a reference is indicative of the development and/or existence of resistance of said cells to the substance.

2. The method of claim 1, wherein said analyzing of gene expression pattern is for at least 5, 10, 39 and 49 ABC transporters selected from those listed in Table 1.

3. The method of claim 1, wherein said analyzing of gene expression pattern for at least 5 genes of the ABC transporter family having unravelled multi-drug resistance function as provided in Table 1.

4. The method of claim 1, wherein said resistance of cells is resistance of cells from a patient to the chemotherapy by a given drug.

5. The method of any one of claim 1, wherein said drug is selected from Table 3.

6. The method of claim 1, wherein said cells are incubated in the presence of said drug.

7. The method of claim 6, wherein the cells are derived from a patient and wherein said method is designed the determination of a potential active drug for the patient treatment.

8. The method of any one of claims 1, 2, or 3, further comprising determining an activity of said drug against said cells.

9. The method of any one of claims 1, 2, or 3, further comprising selecting of an active drug for patient treatment.

10. A method for monitoring a patient treated with a drug for chemotherapy, comprising the method of any one of claims 1, 2, or 3, wherein said drug is for chemotherapy.

11. The method of claim 1, wherein the micro-array contains at least one gene selected from Kir6.1, Kir6.2 and IMPT.

12. The method of claim 1, wherein said sample containing cells is from acute myeloid leukemia.

13. The method of claim 1, wherein said sample containing cells is from acute lymphocytic leukemia.

14. The method of claim 1, wherein said sample containing cells is from solid tumors.

15. The method of claim 1, wherein said capture probes are single-stranded nucleotides

16. The method of claim 1, wherein each one specific location gives the quantification of one ABC transporters gene.

17. A kit, comprising an array with capture probes located at specific locations for the detection and quantification of the gene expression of at least 5 ABC transporters.